# CONTENTS OF VOLUME 427

*August* 1990

RÜEGG D.G., KRAUER R. & DREWS H. Superposition of H reflexes on steady contractions in man. 1

POUCHER S.M., NOWELL C.G. & COLLIS M.G. The role of adenosine in exercise hyperaemia of the gracilis muscle in anaesthetized cats. 19

HIRSCH J.C. & CREPEL F. Use-dependent changes in synaptic efficacy in rat prefrontal neurons *in vitro*. 31

WUTTKE Werner A. & BERRY Michael S. Rapid co-transport of sodium and chloride ions in giant salivary gland cells of the leech *Haementeria ghilianii*. 51

CREMASCHI D., JAMES P.S., ROSSETTI C. & SMITH M.W. Chloride conductance and intracellular chloride accumulation in mouse Peyer's patch enterocytes. 71

BROWN D., CREMASCHI D., JAMES P.S., ROSSETTI C. & SMITH M.W. Brush-border membrane alkaline phosphatase activity in mouse Peyer's patch follicle-associated enterocytes. 81

CLARK Robert B., TSE Amy & GILES W.R. Electrophysiology of parasympathetic neurones isolated from the interatrial septum of bull-frog heart. 89

TSE Amy, CLARK Robert B. & GILES W.R. Muscarinic modulation of calcium current in neurones from the interatrial septum of bull-frog heart. 127

ROME Lawrence C. & SOSNICKI Andrzej A. The influence of temperature on mechanics of red muscle in carp. 151

MISSIAEN Ludwig, DECLERCK Ingrid, DROOGMANS Guy, PLESSERS Lutgart, DE SMEDT Humbert, RAEYMAEKERS Luc & CASTEELS Rik Agonist-dependent $Ca^{2+}$ and $Mn^{2+}$ entry dependent on state of filling of $Ca^{2+}$ stores in aortic smooth muscle cells of the rat. 171

NEUHAUS R., ROSENTHAL Rita & LÜTTGAU H.Ch. The effects of dihydropyridine derivatives on force and $Ca^{2+}$ current in frog skeletal muscle fibres. 187

ORTIZ Olga E., LEW Virgilio L. & BOOKCHIN Robert M. Deoxygenation permeabilizes sickle cell anaemia red cells to magnesium and reverses its gradient in the dense cells. 211

MORIMOTO Akio, MURAKAMI Naotoshi, SAKATA Yoshiyuki, WATANABE Tatsuo & YAMAGUCHI Kazuhito Functional and structural differences in febrile mechanism between rabbits and rats. 227

KAILA K., SAARIKOSKI J. & VOIPIO J. Mechanism of action of GABA on intracellular pH and on surface pH in crayfish muscle fibres. 241

BONHAM A.C. & MCCRIMMON D.R. Neurones in a discrete region of the nucleus tractus solitarius are required for the Breuer–Hering reflex in rat. 261

FALL Magnus, LINDSTRÖM Sivert & MAZIÈRES Leonor A bladder-to-bladder cooling reflex in the cat. 281

IMAIZUMI Yuji, MURAKI Katsuhiko & WATANABE Minoru Characteristics of transient outward current in single smooth muscle cells from the ureter of the guinea-pig. 301

BIELEN Frieda V., BOSTEELS Suzanne & VERDONCK Fons Consequences of $CO_2$ acidosis for transmembrane $Na^+$ transport and membrane current in rabbit cardiac Purkinje fibres. 325

HESPEL P. & RICHTER E.A. Glucose uptake and transport in contracting, perfused rat muscle with different pre-contraction glycogen concentrations. 347

FRANCO Alfredo JR & LANSMAN Jeffry B. Stretch-sensitive channels in developing muscle cells from a mouse cell line. 361

MARKRAM H. & SEGAL M. Long-lasting facilitation of excitatory postsynaptic potentials in the rat hippocampus by acetylcholine. 381

KOMORI S. & BOLTON T.B. Role of G-proteins in muscarinic receptor inward and outward currents in rabbit jejunal smooth muscle. 395

BĄDZYŃSKA B., SADOWSKI J. & DOBROWOLSKI L. Atrial peptide natriuresis in the rat without genuine rise in filtration rate or wash-out of medullary electrolytes. 421

LEA T.J. & ASHLEY C.C. $Ca^{2+}$ release from the sarcoplasmic reticulum of barnacle myofibrillar bundles initiated by photolysis of caged $Ca^{2+}$. 435

CODY Frederick W.J., SCHWARTZ Matthijs P. & SMIT Geert P. Proprioceptive guidance of human voluntary wrist movements studied using muscle vibration. 455

ASHTON N., ARGENT B.E. & GREEN R. Effect of vasoactive intestinal peptide, bombesin and substance P on fluid secretion by isolated rat pancreatic ducts. 471

WELLS T., FORSLING Mary L. & WINDLE R.J. The vasopressin response to centrally administered hypertonic solutions in the conscious rat. 483

SONTAG Jean-Marie, SANDERSON Pamela, KLEPPER Michel, AUNIS Dominique, TAKEDA Kenneth & BADER Marie-France Modulation of secretion by dopamine involves decreases in calcium and nicotinic currents in bovine chromaffin cells. 495

PAN Z.Z., WILLIAMS J.T. & OSBORNE P.B. Opioid actions on single nucleus raphe magnus neurons from rat and guinea-pig *in vitro*. 519

PATON Julian F.R. & SPYER K. Michael Brain stem regions mediating the cardiovascular responses elicited from the posterior cerebellar cortex in the rabbit. 533

PATON J.F.R., SILVA-CARVALHO L., GOLDSMITH G.E. & SPYER K.M. Inhibition of barosensitive neurones evoked by lobule IX b of the posterior cerebellar cortex in the decerebrate rabbit. 553

MĂRGINEANU Doru-Georg & VAN DRIESSCHE Willy Effects of millimolar concentrations of glutaraldehyde on the electrical properties of frog skin. 567

OKADO Haruo & TAKAHASHI Kunitaro Differentiation of membrane excitability in isolated cleavage-arrested blastomeres from early ascidian embryos. 583

OKADO Haruo & TAKAHASHI Kunitaro Induced neural-type differentiation in the cleavage-arrested blastomere isolated from early ascidian embryos. 603

MATHIE Alistair, COLQUHOUN David & CULL-CANDY Stuart G. Rectification of currents activated by nicotinic acetylcholine receptors in rat sympathetic ganglion neurones. 625

MATSUDA J.J., VOLK K.A. & SHIBATA E.F. Calcium currents in isolated rabbit coronary arterial smooth muscle myocytes. 657

SCHNAPF J.L., NUNN B.J., MEISTER M. & BAYLOR D.A. Visual transduction in cones of the monkey *Macaca fascicularis*. 681

PROCEEDINGS OF THE PHYSIOLOGICAL SOCIETY

19–20 *April* 1990

*Nottingham Meeting*

DEMONSTRATIONS

*Bennett T., Compton A.M., Gardiner S.M., Gielen J., Kemp P.A., Schoemaker R. & Smits J.F.M.* Equipment for quantification of cardiac haemodynamics in conscious, unrestrained rats. 2*P*

*Gardiner S.M., Compton A.M., Bennett T. & Hartley C.J.* Modifications to a commercially available pulsed Doppler system to permit reliable detection of changes in cardiac output in conscious rats. 3*P*

*Short A.H., Mawby Janet M. & Birmingham A.T.* Marshall Hall, FRS (1790–1857). 4*P*

*Waterfall A.H., Clarke R.W. & Bennett G.W.* The use of microdialysis with radioimmunoassay for the measurement of thyrotrophin-releasing hormone in rat brain *in vivo*. 5*P*

*Crespi F. & Marsden C.A.* Measurement of physiological electroactive compounds using carbon-fibre microelectrodes combined with differential pulse voltammetry. 6*P*

*Siyamak A.Y. & Macdonald I.A.* An open-circuit technique for measuring metabolic rate in the rat. 7*P*

*Bassey E.J., Delbridge A.T., Hillier J.H. & Hadlington A.B.* Use of an isokinetic dynamometer for studying controlled intermittent isotonic efforts in man. 8*P*

*The Scientific Advisory Board of the National Fitness Survey.* A national survey of exercise, fitness and health. 9*P*

COMMUNICATIONS

*Gates H.-J.* The importance of competition in synapse withdrawal from mismatching fibres in developing rat lumbrical muscle. 10*P*

*Bassey E.J., Delbridge A.T. & Hadlington A.B.* Force failure during repeated isotonic biceps contraction; relation with maximal contractile force in man. 11*P*

*Bassey E.J., Tay G. & West F.* A comparison between power output in a single leg extension and in weight-bearing activities of brief duration such as stair-running in man. 12*P*

*Astrup A.V., Thorbek G., Lind J. & Isaksson B.* Prediction of 24 h energy expenditure and its components from physical characteristics and body composition in normal-weight humans. 13*P*

*Coleshaw S.R.K., Johnston G., Macdonald A.G. & Pertwee R.G.* Effects of subanaesthetic doses of nitrous oxide on thermal perception in man. 14*P*

*Siyamak A.Y. & Macdonald I.A.* The effect of diet composition on noradrenaline-induced thermogenesis in underfed rats. 15*P*

*Ingram C.D., Moos F., Wakerley J.B., Guerné Y. & Richard Ph.* Microinjections of oxytocin (OT) into bed nucleus of the stria terminalis (BNST) and lateral septum (LS) facilitate the milk-ejection reflex in anaesthetized, suckled rats. 16*P*

*Clarke G., Davison I. & Wakerley J.B.* Hypothalamic neuroendocrine neurones in the urethane-anaesthetized lactating rat respond to subcutaneous foot-shocks. 17*P*

*Dyball R.E.J., Tasker J.G., Wuarin J.-P. & Dudek F.E.* Intracellular recording from rat supraoptic magnocellular cells *in vivo*. 18*P*

*Demaine C., Forsling Mary L., Kelestimur H. & Stoughton R.P.* Effect of pinealectomy on the vasopressin response to altered plasma volume and osmolality in the rat. 19*P*

*Windle R.J. & Forsling Mary L.* Contribution of hyperosmotic and hypovolaemic stimuli to the observed elevation of oxytocin and vasopressin concentrations in the dehydrated rat. 20*P*

*Mepham T.B., Prosser C.G., Royle C., Silvester L.M., Al-Shaikh M.A. & Fleet I.R.* The galactopoietic response to exogenous growth hormone in ruminants is associated with raised milk glucose concentration. 21*P*

*Capiod T., Sandford C., Combettes L., Noel J., Jenkinson D.H. & Claret M.* Oscillations of $Ca^{2+}$-dependent $K^+$ permeability evoked by $\beta$-adrenoceptor agonists and cAMP in isolated guinea-pig liver cells. 22*P*

*Wuttke W.A. & Berry M.S.* Sodium-dependent chloride accumulation in giant salivary gland cells of the leech, *Haementeria ghilianii*, studied with ion-selective microelectrodes. 23*P*

*Zeuthen Thomas* KCl co-transport increases water transport across an epithelial cell membrane (choroid plexus of *Necturus maculosus*). 24*P*

*Scamans E.M. & Boyd C.A.R.* Simultaneous determination of transmembrane and transepithelial amino acid and sugar transport by epithelial cells cultured on a novel matrix. 25*P*

*Levin R.J. & Young A.* The effects of *E. coli* STa on intestinal fluid transport in anaesthetized fed and starved rats *in vivo*. 26*P*

*Davison J.S., Mathison R., Wootton Penny, Rimmer Carol & Befus A.D.* Gastric acid secretion induced in anaphylaxis in *Nippostrongylus brasiliensis*-sensitized rats. 27*P*

*Dashwood M.R., Sykes R.M. & Yacoub M.H.* [$^{125}$I] endothelin binding sites on human coronary tissue. 28*P*

*Melville C.A., Trainor M., McGrath J.C., Daly C., O'Dowd J.J. & Miller D.J.* Carnosine shows $\alpha$-adrenoceptor agonist and antagonist properties in saphenous vein isolated from rabbit. 29*P*

*Dunn W.R., McGrath J.C. & Wilson V.G.* Activation of post-junctional $\alpha_2$-adrenoceptors in the rabbit isolated saphenous vein is linked to the opening of dihydropyridine-insensitive calcium channels. 30*P*

*Drodge K.H. & Scott T.M.* *In vivo* and *in vitro* capsaicin treatment reduces endothelium-dependent vascular relaxation to acetylcholine in the rat. 31*P*

*Gardiner S.M., Compton A.M., Bennett T., Palmer R.M.J. & Moncada S.* Haemodynamic effects of L-nitroarginine methyl ester in conscious rats. 32*P*

*Stanley J.C., Martin J.L., Barron M.E., Lovick A.H.J., Nelson R.J., Richards H.K. & Pickard J.D.* A study of the cardiovascular and cerebrovascular effects of calcitonin gene-related peptide in human volunteers. 33*P*

*Martin J., Nelson R.J., Perry S. & Pickard J.D.* The cerebrovascular and cardiovascular effects of calcitonin gene-related peptide (CGRP) in the anaesthetized rabbit. 34*P*

*Muller A.F., Stainer K., Fullwood L., Hawkins M. & Cowley A.J.* The regional haemodynamic effects of food in normal volunteers. 35*P*

*Rahman M.A. & Farquhar I.* Ethnic differences in cardiovascular reflex responses in Bangladeshi and European subjects. 36*P*

*Angell-James J.E., Besser G.M., Bouloux P., Collier D.J., Grossman A. & McMurray R.G.* Naloxone infusion and carotid sinus baroreceptor reflex in resting man. 37*P*

*Sidery M.B., Macdonald I.A. & Birmingham A.T.* A comparison of three indirect techniques for measuring blood pressure in man. 38*P*

*De Cort S.C., Innes J.A. & Guz A.* Cardiac output, oxygen consumption and arteriovenous oxygen difference following a sudden increase in exercise workload in man. 39*P*

*Brown M.D., Cleasby M.J. & Hudlická O.* Capillary supply of hypertrophied rat hearts after chronic treatment with the bradycardic agent alinidine. 40*P*

*Poucher S.M.* The role of local metabolites in vasodilatation during hindlimb exercise of the anaesthetized cat. 41*P*

*Karim F. & Al-Obaidi M.* The influence of left atrial receptors on reflex renal responses to stimulation of the carotid chemoreceptors in anaesthetized dogs. 42*P*

*Popham P., Band D. & Linton R.* Potassium infusions cause release of adrenaline in anaesthetized cats. 43*P*

*McLoughlin P., Popham P., Bruce R.C.H., Linton R.A.F. & Band D.M.* Plasma potassium and the ventilatory threshold in man. 44*P*

*Bascom D.A., Clement I.D., Conway J., Dorrington K.L., O'Connor D.F., Painter R., Paterson D.J. & Robbins P.A.* A comparison of euoxic and hypoxic ventilatory responses to acute metabolic acidosis with the responses to $CO_2$ inhalation in man. 45*P*

*Appenteng Kwabena, Curtis John C. & Moore Jane A.* Unitary monosynaptic EPSPs elicited by V interneurones in V motoneurones of anaesthetized rats. 46*P*

*Sizer A.R. & Roberts M.H.T.* Bicuculline-evoked epileptiform discharge is depressed by 5-hydroxytryptamine in rat entorhinal cortex *in vitro*. 47*P*

*Brandao M.L., Rees H., Witt Sarah & Roberts M.H.T.* Anterior pretectal nucleus stimulation attenuates the autonomic effects in anaesthetized rats and aversive effects in unanaesthetized rats of medial hypothalamic stimulation. 48*P*

*Mason R. & Biello S.M.* Benzodiazepine-induced shifts in the circadian variation in discharge activity of Syrian hamster suprachiasmatic neurones *in vitro*. 49*P*

*Mason R.* The effects of continuous light and lesions on the circadian variation in neuronal discharge activity of Syrian hamster suprachiasmatic neurones *in vitro*. 50*P*

*Julu P.O.O. & Mutamba A.* Essential fatty acids (EFAs) correct slowed nerve conduction velocity (CV) faster than insulin in anaesthetized rats having streptozotocin (STZ) diabetes. 51*P*

*Piccolino M. & Belluzzi O.* Oscillatory potentials induced by steady peripheral illumination in horizontal cell axon terminals (HCATs) of the isolated *Pseudemys* turtle retina. 52*P*

*Suleiman M.S., Rodrigo Glenn C. & Chapman R.A.* Effect of hypothermia on Na influx during the Ca paradox in guinea-pig ventricular myocytes and isolated ventricular trabeculae of the ferret. 53*P*

*Miller D.J., Campbell J., O'Dowd J.J. & Robins D.J.* Novel endogenous imidazoles calcium-sensitize chemically skinned rat heart muscle. 54*P*

*Somasundaram B., Tregear R.T. & Trentham D.R.* The effect of calcium channel blockers on GTPγS-induced contractions in skinned frog skeletal muscle fibres. 55*P*

*Putnam R.W.* Localization of pH-regulating transport systems to the surface membrane of semitendinosus muscle isolated from the frog, *Rana pipiens*. 56*P*

*Packard A.* Advantages (and disadvantages) of octopus skin for smooth muscle physiology: a protocol for visual recording *in vivo*. 57*P*

*Packard A.* Four-dimensional analysis of patterned activity in a complex smooth muscle system: octopus skin. 58*P*

*Janssen P., Gardiner S.M., Compton A.M. & Bennett T.* Influence of phentolamine and propranolol on the regional haemodynamic effects of bombesin in conscious, Long–Evans rats. 59*P*

*Rankin A.J., McWilliam T.M., Swift F.V. & Triggle C.R.* *In vitro* desensitization of the vasorelaxant effects of atrial natriuretic factor on the rat aortic ring preparation. 60*P*